

REMARKS

Rejections under 35 USC §102(b)

Claims 1, 2 and 5 were rejected under 35 USC §102(b) as being anticipated by Awschalom (U.S. Patent No. 6,307,241).

Claim 1 has been amended to recite, among other things, “wherein said semiconductor and said rare-earth metal element **form a mixed crystal** of them so as to allow said semiconductor material to **have a ferromagnetic state maintaining transparency.**” The amendment is supported in the original specification at page 1, lines 7-13.

Awschalom discloses room temperature ferromagnets. Awschalom describes as follows:

Further, the spacing among the ferromagnetic precipitates can be tuned by varying the implantation dosage and annealing conditions. As shown in the following EXAMPLE, **the precipitates of GaMn-rich crystals were formed, and the average size was about 200 nm.** For the GaAs receiving 5×10^{16} Mn ions/cm² and annealed at 920°C. for 1 minute, the spacing is about 1μm (FIG. 2). These precipitates were room temperature ferromagnets, and the Curie temperature was well above 400 K.

(Awschalom, column 5, lines 17-25). Thus, the room temperature ferromagnets according to Awschalom contain the precipitates of crystals with the average size of about 200 nm. Thus, the ferromagnetism is brought by the precipitates of ferromagnetic material.

In contrast, according to the present invention, the semiconductor and the rare-earth metal element form a mixed crystal, which is different from the semiconductor material including precipitates of ferromagnetic material as shown in Awschalom. Mixed crystal is a solid solution

in the form of crystal, which is a crystal containing a second constituent which fits into and is distributed in the lattice of the host crystal. The semiconductor material of the present invention has a ferromagnetic state maintaining transparency.

Thus, Awschalom does not teach or suggest “wherein said semiconductor and said rare-earth metal element **form a mixed crystal** so as to allow said semiconductor material to **have a ferromagnetic state maintaining transparency**,” as recited in amended claim 1.

For at least these reasons, claim 1 patentably distinguishes over Awschalom. Claim 2, depending from claim 1, also patentably distinguishes over Awschalom for at least the same reasons.

Claims 3 and 4 were rejected under 35 USC §102(b) as being anticipated by Hobson (U.S. Patent No. 5,912,498).

Claim 4 has been cancelled. Thus, the rejection against claim 4 has become moot.

Claim 3 has been amended to depend from claim 1 and to recite “wherein the semiconductor material comprises a group III-V-based compound semiconductor, Gd and **oxygen as a donor**.” The amendment is supported in the specification at page 12, lines 17-22.

Hobson et al discloses a mixed oxide that contains Ga, Gd and oxygen (column 1, lines 48-53). The mixed oxide is used as a gate oxide (column 4, lines 37 and 38). Such disclosures of Hobson et al do not remedy the deficiencies of Awschalom.

For at least these reasons, claim 1 patentably distinguishes over Awschalom and Hobson.

Amendment under 37 CFR §1.111
Application No. 10/516,687
Attorney Docket No. 042880

In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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